D H E C
PROMOTE PROTECT PROSPER
South Carolina Department of Health and Environmental Control

Summary of Cancer Incidence and Mortality for Zip Code 29488 (Walterboro, SC)

South Carolina Central Cancer Registry
South Carolina Department of Health and Environmental Control

In order to determine if there are any unusual cancer patterns in an area the first step is to look at the number of new cancer cases (incidence) or deaths (mortality) occurring in the ZIP code and compare this to the number of cancer cases and deaths expected to occur by chance alone, given the corresponding South Carolina state rates (see Tables 1 & 2). The number of expected cases and deaths are determined by using South Carolina state cancer incidence and mortality rates and applying them to the population of the geographic area (29488). These observed and expected values allow for the calculation of a chi-square test statistic to look for statistically significant differences in incidence. Note that although some differences in incidence or mortality may be statistically significant, *they may still not meet all of the criteria to qualify as a significant cancer cluster*. When significant results are encountered, additional steps are taken to look at the data more closely (e.g., counts, type of cancers, age, etc.).

Cancer Incidence in ZIP Code 29488

Table 1 shows what types of cancer occurred in ZIP code 29488 from 2000-2004, and how many cancer cases were expected. Overall, there were more cases of cancer observed than expected. A total of 617 new cases of cancer occurred in the ZIP code, while 516 cases were expected. The most common types of cancer were lung/bronchus, prostate, female breast, and colon/rectum cancers. These four types of cancer are also the most common cancers occurring across all of South Carolina.

The analysis revealed two specific cancer types **(lung/bronchus and prostate)** where the number of cases was significantly higher than expected. A total of 130 lung/bronchus cancer cases occurred in this ZIP code while 82 were expected. By far, the most important risk factor for lung cancer is smoking. More than 80% of lung cancers are thought to result from smoking. However, there are other factors that can increase a person's risk of developing lung cancer. Exposure to second-hand smoke, asbestos, and radon increase risk. Also, exposure to cancer-causing agents in the workplace, such as uranium, arsenic, vinyl chloride, nickel chromates, coal products, fuels, and diesel exhaust can increase lung cancer risk. In addition, recurring inflammation, such as from tuberculosis or pneumonia, can leave scarring on the lungs, increasing the risk of developing lung cancer (1,2).

A total of 109 new prostate cancer cases occurred in ZIP code 29488 while 82 were expected. The causes of prostate cancer are not well known, however, researchers have determined a few risk factors that increase a man's chance of developing this disease. These risk factors include increasing age, a diet high in fat, a lack of physical activity, and family history of the disease. Also, prostate cancer occurs almost 70% more often in African-Americans as it does in white American men (1,2).

Cancer Deaths in ZIP Code 29488

To assess cancer deaths in this ZIP code, cancer mortality data from 2000-2004 were used. The same process used to analyze new cancer cases was also used to analyze cancer deaths. Table 2 shows the number of cancer deaths that occurred and the number expected in the ZIP code. A total of 275 cancer deaths occurred in this ZIP code, while 219 deaths were expected. Therefore, higher cancer deaths occurred than expected. The analysis revealed two

specific cancer types **(lung/bronchus and prostate)** where the number of cancer deaths was significantly higher than expected. A total of 101 lung/bronchus and 27 prostate cancer cases were observed while 66 and 12 were expected, respectively.

Conclusions

To summarize, higher cancer cases and deaths occurred in ZIP code 29488 than expected. Lung/bronchus and prostate cancer cases and deaths were significantly elevated. Both of these cancer types are among the most common cancers and cause of cancer deaths in the US and SC. Colleton County, where ZIP code 29488 is located, ranks 1st in overall cancer incidence, 1st in lung/bronchus cancer incidence and 3rd in prostate cancer incidence. In cancer deaths, Colleton County ranks 8th in overall cancer deaths, 7th for lung/bronchus, and 1st for prostate.

In order for a true cancer cluster to exist, the number of cancers occurring must be more than would be expected by chance. Along with statistical testing, there are several other criteria that determine whether a true cancer cluster exists. First, a cancer cluster would more likely involve rarer types of cancer rather than more common cancers like lung or prostate cancers. Also, a cancer cluster would occur with one specific type of cancer rather than having excesses in several different types of cancer. (See Cancer Assessment Investigation Guidelines for further information).

Taking all these criteria into consideration, the South Carolina Central Cancer Registry determined there is no evidence of cancer clustering in ZIP code 29488.

For questions about this report, please contact Susan Bolick-Aldrich at the SC Central Cancer Registry.

Report provided by:

SC Central Cancer Registry
Department of Health and Environmental Control
810 Dutch Square Blvd., Ste. 220
Columbia, SC 29210
Phone: (800) 817-4774 or (803) 731-1419

References:

1. American Cancer Society website, www.cancer.org
2. National Cancer Institute, www.cancer.gov

Information on cancer incidence provided by the SC Central Cancer Registry, Office of Public Health Statistics and Information Services, SC Dept. of Health and Environmental Control.

Information on cancer mortality provided by the Division of Vital Registry and the Division of Biostatistics & Health GIS, SC Dept. of Health and Environmental Control.

05/07/07cmm

Table 1. Analysis of Cancer Cases in ZIP Code 29488, 2000-2004

Cancer Type	Observed No. of Cases	Expected No. of Cases	Observed/ Expected	Chi-Square Test*	Significance
Lung & Bronchus	**130**	**81.5**	**1.60**	**28.93**	**YES↑**
Prostate	**109**	**81.7**	**1.33**	**9.09**	**YES↑**
Female Breast	83	73.5	1.13	1.24	NO
Colon & Rectum	72	58.5	1.23	3.13	NO
Kidney & Renal Pelvis	19	14.7	1.29	1.24	NO
Urinary Bladder	18	19.5	0.92	0.11	NO
Non-Hodgkin Lymphoma	16	18.5	0.86	0.34	NO
Other Unknown, Ill-defined	14	N/A	N/A	N/A	N/A
Corpus and Uteri, NOS	14	11.7	1.19	0.43	NO
Melanoma of the Skin	13	19.7	0.66	2.26	NO
Oral Cavity & Pharynx	13	12.8	1.01	0.00	NO
Pancreas	13	12.0	1.09	0.09	NO
Leukemia	12	12.8	0.94	0.05	NO
Myeloma	11	7.1	1.55	2.16	NO
Esophagus	9	6.0	1.50	1.52	NO
Cervix Uteri	7	5.2	1.35	0.63	NO
Stomach	6	8.0	0.75	0.48	NO
Brain & CNS	5	6.7	0.75	0.42	NO
Thyroid	5	6.5	0.77	0.33	NO
Larynx	5	6.0	0.83	0.18	NO
Ovary	2	7.9	0.25	4.39	YES ↓
All Cancer Sites	**617**	**516.2**	**1.20**	**19.68**	**YES ↑**

Excludes in-situ cases of cancer, except bladder to allow for comparison.

Cancer Types with less than 5 cases of cancer expected are not analyzed due to the unreliability of statistical tests based on small numbers.

*** The Chi-square statistical test allows us to determine if the difference between what is observed and what is expected is significant.**

If the value is greater than 3.84, then we are 95% confident that the observed number of cases is significantly different from the expected number of cases.

↑: Indicates that the observed number of cases were significantly higher than the expected; based on a Chi-square value greater than 3.84.

↓: Indicates that the observed number of cases were significantly lower than the expected; based on a Chi-square value greater than 3.84.

Table 2. Analysis of Cancer Deaths in ZIP Code 29488, 2000-2004

Cause of Death	Observed No. of Deaths	Expected No. of Deaths	Observed/ Expected	Chi-Square Test*	Significance
Lung and Bronchus	**101**	**66.2**	**1.53**	**18.31**	**YES↑**
Prostate	**27**	**12.3**	**2.19**	**17.42**	**YES↑**
Colon and Rectum	23	21.2	1.08	0.15	NO
Female Breast	18	16.0	1.12	0.25	NO
Pancreas	17	11.8	1.45	2.35	NO
Esophagus	9	5.5	1.63	2.18	NO
Myeloma	8	5.1	1.56	1.62	NO
Miscellaneous Malignant Cancer	6	N/A	N/A	N/A	N/A
Non-Hodgkin Lymphoma	5	7.4	0.68	0.76	NO
Stomach	5	5.1	0.97	0.00	NO
Leukemia	4	7.9	0.51	1.93	NO
Ovary	2	5.0	0.40	1.83	NO
All Malignant Cancers	**275**	**219.3**	**1.25**	**14.14**	**YES↑**

Cancer Types with less than 5 cancer deaths expected are not analyzed due to the unreliability of statistical tests based on small numbers.

***The Chi-square statistical test allows us to determine if the difference between what is observed and what is expected is significant.**

If the value is greater than 3.84, then we are 95% confident that the observed number of deaths is significantly different from the expected number of deaths.

↑: Indicates that the observed number of deaths were significantly higher than the expected; based on a Chi-square value greater than 3.84.